Project: Analyzing a Market Test

Step 1: Plan Your Analysis

1. To evaluate the result of test performance metric will be Gross Margin..

2. Test Period is 2016-April-29 to 2016-July-21

3. Aggregate the data to get the weekly gross margin and weekly traffic count (count of unique invoices)

Step 2: Clean Up Your Data

1. *To calculate the store traffic:*

    Firstly filter the data from the Round Roaster Transaction in date range `"2015-02-06" – "2016-07-22".`

2. Then calculated the week column, assign week 1 to the first week of the test period, so the week begin variable for week 1 would be test start date and similarly the week end variable for week 1 would be the test end date.

3. Lastly by using summarize tool group by data by store Id, week, week start, week end and count the distinct invoice number, sum of sales, gross margin and quantity in a week.
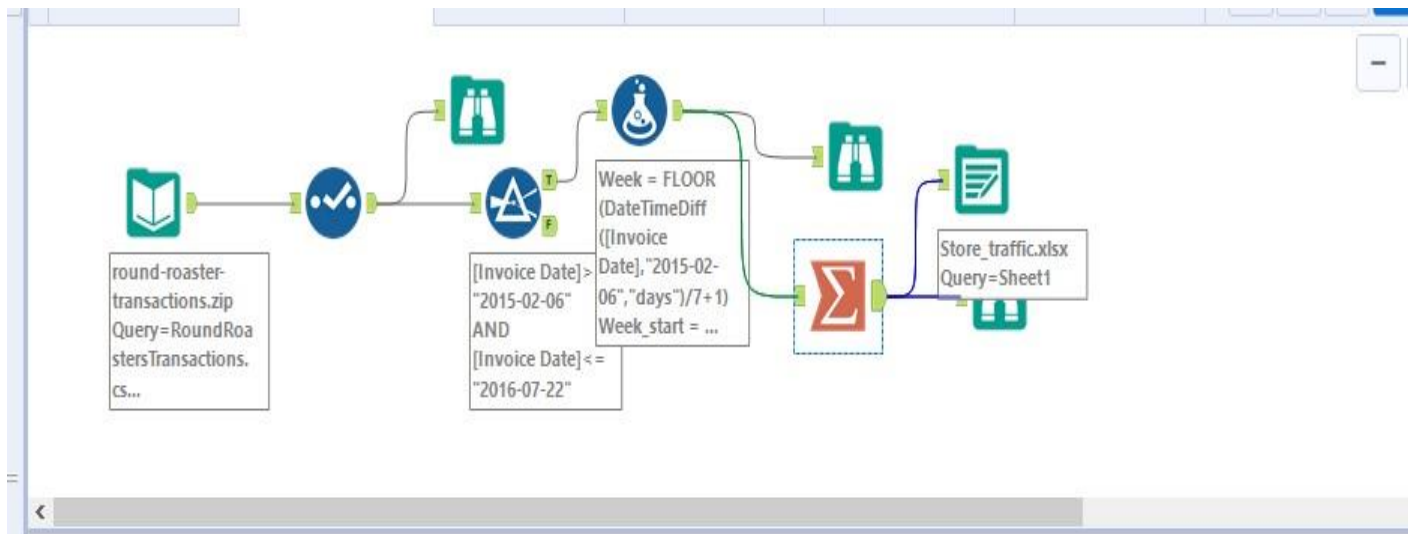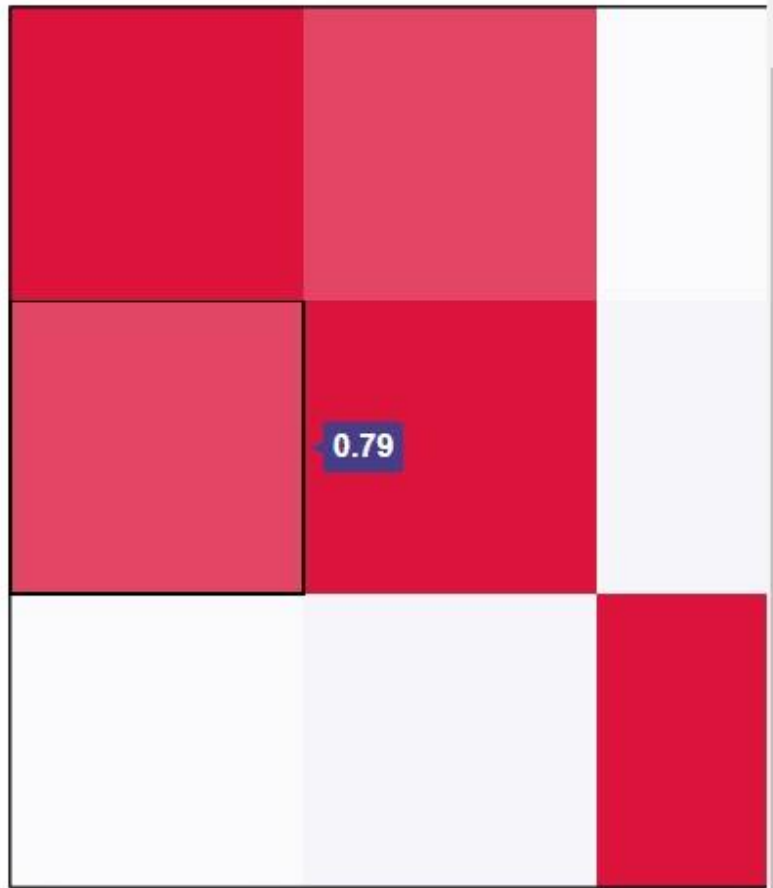

Step 3: Match Treatment and Control Units
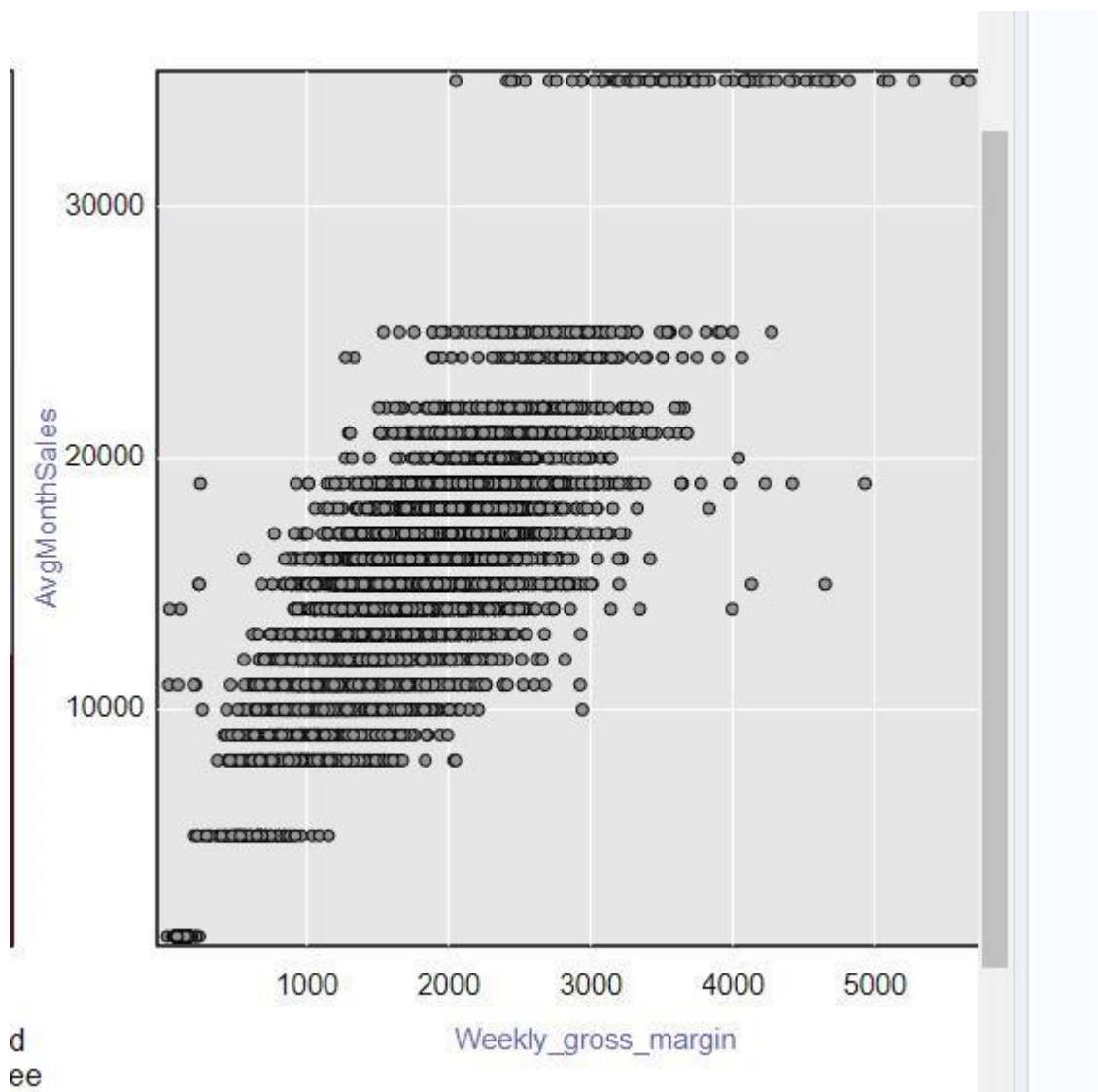
1.Control Variables: Average Month sales and Sq. ft.

2.Correlation between each potential control variable and performance metric:

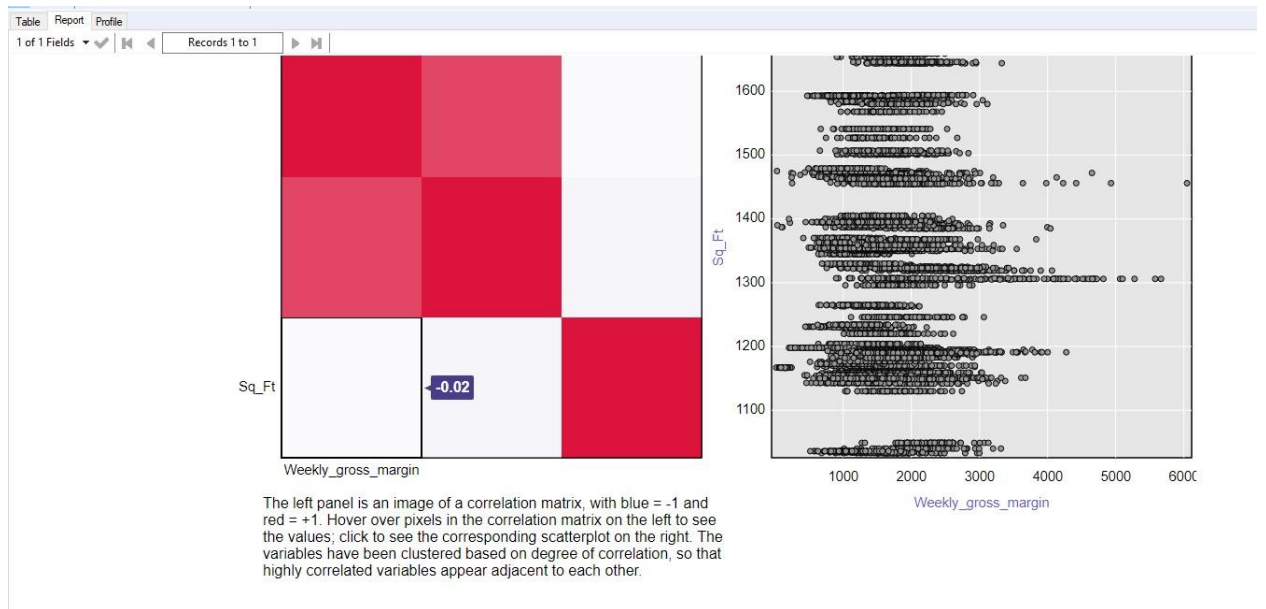- **Positive correlation between Average month sales and gross margin.**

onthSales

0.79

Weekly_gross_margin

The left panel is an image of a correlation matrix, with blue = -1 and red = +1. Hover over pixels in the correlation matrix on the left to see the values; click to see the corresponding scatterplot on the right. The variables have been clustered based on degree of correlation, so that highly correlated variables appear adjacent to each other.

- **Negative correlation between sq. ft. and gross margin.**

Record	Layout
1	

Pearson Correlation Analysis

Focused Analysis on Field Weekly_gross_margin

	Association Measure	p-value
AvgMonthSales	0.788408	0.000000 ***
Sq_Ft	-0.020474	0.039457 *

Full Correlation Matrix

	Weekly_gross_margin	Sq_Ft	AvgMonthSales
Weekly_gross_margin	1.000000	-0.020474	0.788408
Sq_Ft	-0.020474	1.000000	-0.047046
AvgMonthSales	0.788408	-0.047046	1.000000

Matrix of Corresponding p-values

	Weekly_gross_margin	Sq_Ft	AvgMonthSales
Weekly_gross_margin		3.9457e-02	0.0000e+00
Sq_Ft	3.9457e-02		2.1983e-06
AvgMonthSales	0.0000e+00	2.1983e-06	

3.To match treatment and control store ==Trend, seasonality and Average month sale==s will be used as control variables.

4.Treatment and control stores pairs:

Treatment Store	Control Store 1	Control Store 2
1664	7162	8112
1675	1580	1807
1696	1964	1863
1700	2014	1630
1712	8162	7434
2288	9081	2468
2293	12219	9524
2301	3102	9238
2322	2409	3235
2341	12536	2383

Trend.xlsx
Query=Sheet1

Store_traffic.xlsx
Query=`Sheet1$`
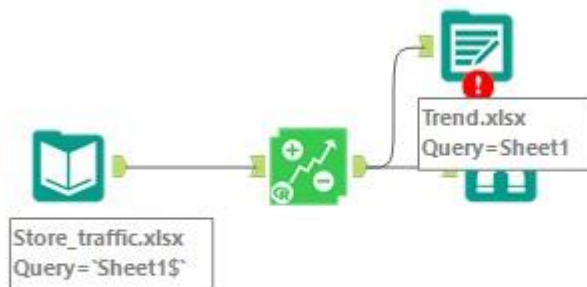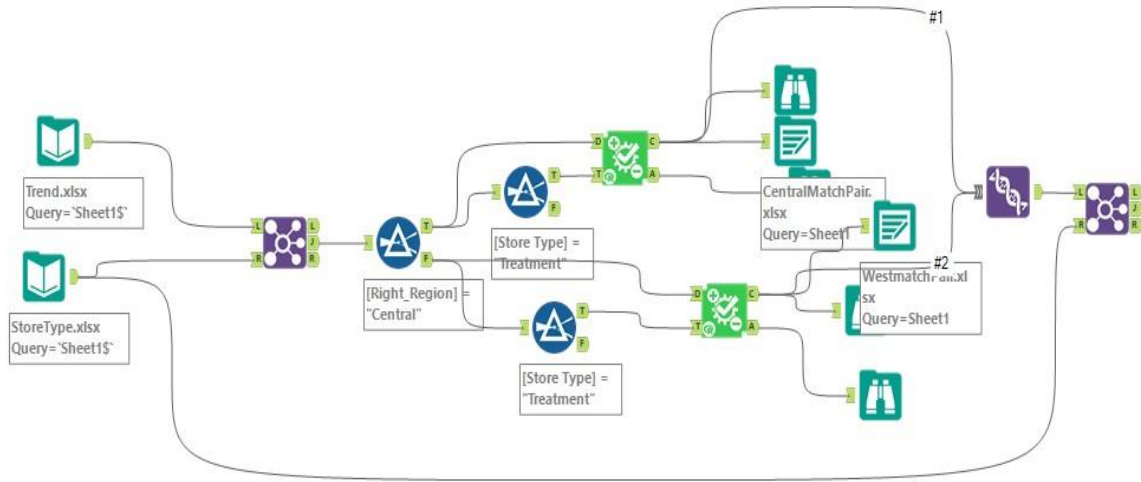
Step 4: Analysis and Write up
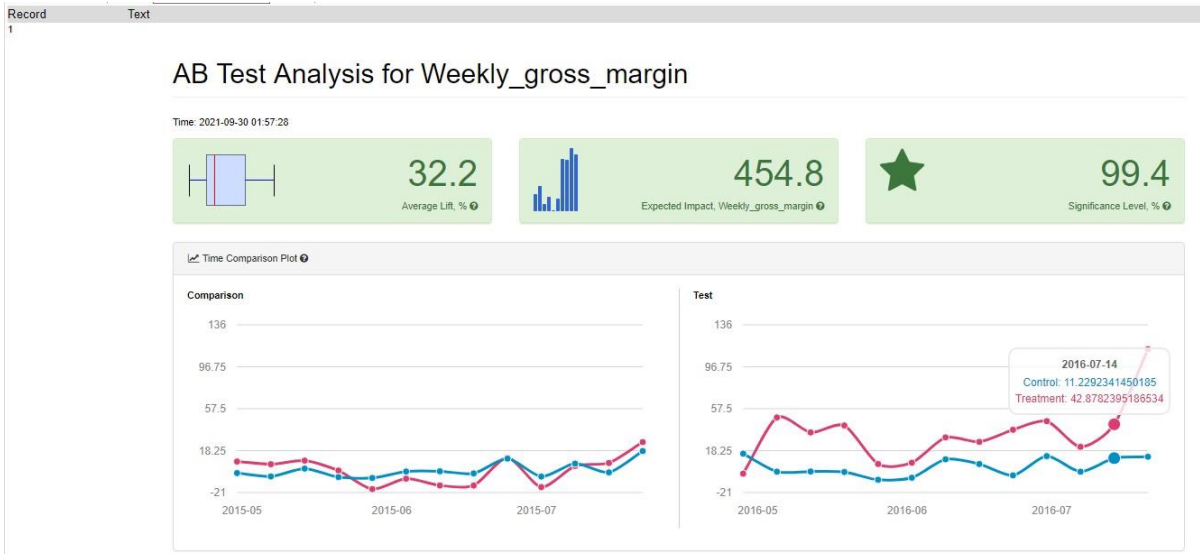
      1.   Yes, company should roll out the updated menu to all the stores because predicted impact to profitability is enough to justify the increased marketing budget that is more than18% increase in profit growth compared to the comparative period while compared to the control stores.
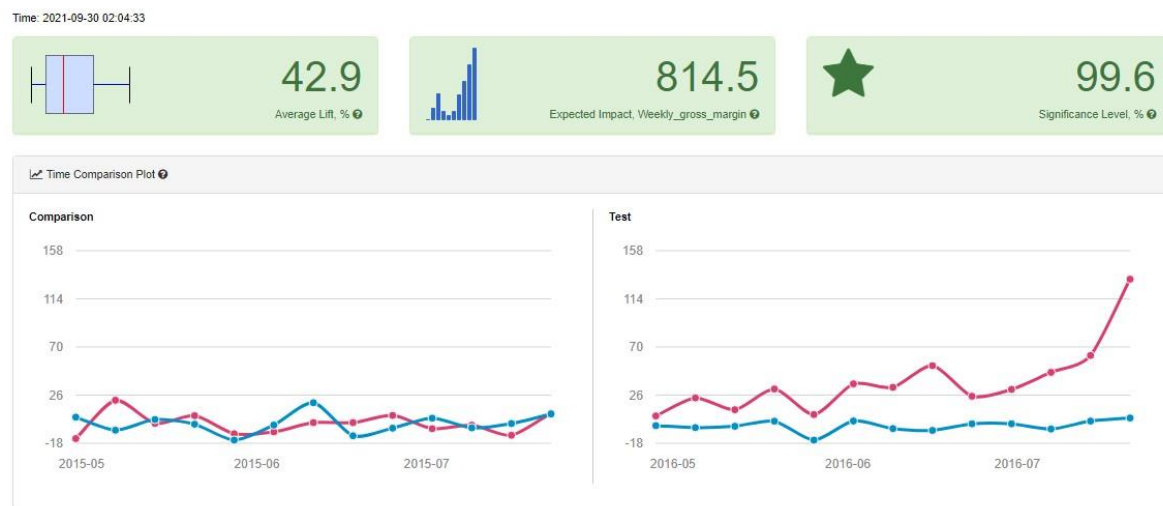
      2.   Lift from the new menu for West region: 32.2%

Statistical significance: 99.4%

AB Test Analysis for Weekly_gross_margin

Time: 2021-09-30 01:57:28

	32.2		454.8	★	99.4
	Average Lift, %		Expected Impact, Weekly_gross_margin		Significance Level, %

Time Comparison Plot

Comparison

| 136 |
| 96.75 |
| 57.5 |
| 18.25 |
| -21 |
| 2015-05   2015-06   2015-07 |

Test

| 136 |
| 96.75 |
| 57.5 |
| 18.25 |
| -21 |
| 2016-05   2016-06   2016-07 |

2016-07-14
Control: 11.2292341450185
Treatment: 42.8782395186534

- Lift from the new menu for Central region: **42.9%**
- Statistical significance for Central Region: **99.6%**

AB Test Analysis for Weekly_gross_margin

Time: 2021-09-30 02:04:33

	42.9		814.5	★	99.6
	Average Lift, %		Expected Impact, Weekly_gross_margin		Significance Level, %

Time Comparison Plot

Comparison

| 158 |
| 114 |
| 70 |
| 26 |
| -18 |
| 2015-05   2015-06   2015-07 |

Test

| 158 |
| 114 |
| 70 |
| 26 |
| -18 |
| 2016-05   2016-06   2016-07 |

3.   For the overall new menu lift is **37.6%**

AB Test Analysis for Weekly_gross_margin

Time: 2021-10-02 00:28:59

37.6
Average Lift, %

634.7
Expected Impact, Weekly_gross_margin

100
Significance Level, %

Time Comparison Plot

Comparison

147
106.25
65.5
24.75
-16

2015-05   2015-06   2015-07

Test

147
106.25
65.5
24.75
-16

2016-05   2016-06   2016-07

P5matchedpair.xlsx
Query=`Sheet1$`

[Region] = "Central"

Store_traffic.xlsx
Query=`Sheet1$`